AMERICAN JOURNAL OF PHARMACY

and

THE SCIENCES SUPPORTING PUBLIC HEALTH

SINCE
1825

THE AMERICAN PHARMACY
An Important Factor in Civilian Health and Morale

DECEMBER
1941

1942 SERIES POPULAR SCIENCE LECTURES

By Members of the Faculty

Philadelphia College of Pharmacy and Science

The theme of the series will be

SCIENCE IN WAR

For twenty-one consecutive years, the Philadelphia College of Pharmacy and Science has offered to the general public a series of Popular Science Talks delivered by members of the Faculty. These lectures have been designed especially to combine scientific accuracy and completeness with a minimum of technical terms, and the topics have always been timely.

This year, with our Country in arms, there can be no more pertinent theme than that of the role played by SCIENCE IN WAR. Accordingly, each of the seven talks of the 1942 Series will deal with one particular phase of the subject, and, while each lecture will be independent of the others, attendance through the entire series will enable the listener to obtain a thorough mind-picture of this most important topic, and will lead to a better understanding of the conduct of war, offensively and defensively.

First lecture — Wednesday, February 4

"WHAT SO PROUDLY WE HAIL"

Health and the War

By DR. IVOR GRIFFITH

Second lecture — Wednesday, February 11

"BY THE DAWN'S EARLY LIGHT"

Physics in the War

By DR. DONALD P. LEGALLEY

Third lecture — Wednesday, February 18

"O'ER THE RAMPARTS WE WATCHED"

Conservation

By PROFESSOR FREEMAN P. STROUP

Fourth lecture — Wednesday, February 25

"BOMBS BURSTING IN AIR"

Chemistry in the War

By DR. ARTHUR OSOL

Fifth lecture — Wednesday, March 4

"AND THE ROCKETS' RED GLARE"

Signals and Detectors

By DR. GEORGE ROSENGARTEN

Sixth lecture — Wednesday, March 11

"AT THE TWILIGHT'S LAST GLEAMING"

Life Saving Medicines

By PROFESSOR LINWOOD F. TICE

Seventh lecture — Wednesday, March 18

"THROUGH THE PERILOUS NIGHT"

Bacteria and the War

By DR. LOUIS GERSHENFELD

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AMERICAN JOURNAL OF PHARMACY

AND THE SCIENCES SUPPORTING PUBLIC HEALTH

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EDITORIALS

On this page attention is drawn to the challenge and responsibility that should be patriotically met by all pharmacists.

PHARMACY AND THE NATIONAL EMERGENCY

ONE of the most evident results of the present world conflict is the tremendous change produced in our everyday life. We have almost overnight been confronted with new and strange restrictions, activities and plans. A few years ago the thought that passenger cars might no longer be manufactured would have been as impossible an idea as an invasion from Mars, but yet here it is and, if we believe those who are our leaders, even greater changes in our manner of living must be made if we are to protect our "way of life."

The length of the war as well as, indeed, its actual outcome will depend to a great extent upon the efficient and co-operative effort of each and every one of us. It becomes every individual's duty to relinquish some part of that personal freedom, privilege and luxury that heretofore have been his. Thus men have been conscripted for military service, labor unions have been asked to ban strikes and overworked industrialists already see a program of taxation which leaves them far less return than that enjoyed in peace time for much less work and capital investment.

It is, therefore, the duty and obligation of pharmacy to likewise give and take and this entails no minor change. Under the present circumstances a pharmacist who sells a person an item that he fully realizes, with his professional knowledge, is worthless weakens the structure of his country. In times such as these, only products having sound value and utility are worth productive effort and the mere fact that an item has a good margin of profit and is in demand does not justify its sale. Another most important change in which the pharmacist can be of help is the elimination of waste. It can be truthfully said that America is the most wasteful country in the world. We have wasted our resources as if their supply were

infinite and, although some persons seem to take pride in this habit, it is an impoverishing influence which is now, more than ever, a disgrace.

The pharmacist must operate with the fundamental principle that the health of his community is in part *his* responsibility and every act should be evaluated on this basis alone. There seems to be little doubt but that the supreme effort that our country must make to win this war of production will seriously menace the health of the people unless it receives the very best of care. If a pharmacist uses this situation to sell worthless drugs and amass profits he is no better than a fifth columnist who deliberately sabotages a defense plant. We should consider ourselves as a member of a huge team comprising every man, woman and child in the United States which will *win* or *lose* depending upon how we play the game.

One of the increased responsibilities which may come to the pharmacist will arise due to the shortage of physicians. The program of medical education in the United States, as with all professional fields, has attempted to prevent an oversupply. But now with skyrocketing demands for physicians by the armed services the civilian supply will of necessity be curtailed. This will undoubtedly lead to an increased importance of the neighborhood pharmacy since civilian physicians may not always be available for minor ailments. This in turn will put pressure upon pharmacy wherein most authorities already recognize a shortage of trained men—men qualified to manufacture, distribute and dispense medicines.

This increased importance of pharmacy can well be a turning point in its history. If we discharge our obligation with full realization of our abilities and limitations, trying to do our very best and yet not exceeding the bounds of propriety or ethics we will earn even greater respect of physician, government and public. If we make use of this advantage with irresponsible and improper acts we shall certainly destroy our profession. Let it be said of pharmacists that in America's dark days—*They did their part.* L. F. TICE.

THE FAIRCHILD SCHOLARSHIP RESULTS

IN the October issue of the *Rocky Mountain Druggist* an editorial entitled "We Can't Help Wondering" questions the low grades made by some of the participants in the examinations for the Fairchild Fellowship Award. It is pointed out that these participants represented excellent students selected from large groups who readily passed State Board examinations. Two conditions are cited as possible explanations for this situation, namely, that either the Board members are not selected because of their superior talents or that Board examinations are not coordinated with college teaching.

In our opinion neither of these conditions, if they exist, have any bearing on the subject. It is true that the examinations are made up by college professors, but they are purposely formulated so that they are extremely difficult, so much so that even some teachers of pharmacy, including the writer, might be hard pressed to make good grades.

The Fairchild Scholarship Examination is not given for the purpose of determining a candidate's fitness for graduation or to practice pharmacy but to evaluate *unusual* ability. Thus, the same yardstick must not be used and the numerical results are of only comparative value in that group.

Although we are not on the Fairchild Scholarship Committee, we are quite sure this is the basis upon which it operates. Possibly others in the field of pharmacy have had similar misgivings about these results, and it is not to be unexpected. We hope that sufficient explanation for this anomalous situation has been presented. It surely cannot be used as an illustration of insufficient board and college coordination.

L. F. TICE.

WHAT FOOD FOR FREEDOM MEANS FOR PHARMACY

By T. Swann Harding

A WELL rounded and carefully selected diet is still the best source of all the essential vitamins and it should be the heritage of every American to receive such a diet. Secretary of Agriculture Wickard has announced a program that will provide an ever increasing rise in the health standards of our country by assuring each and every citizen, regardless of his economic level, an adequate diet of healthful foods.

Addressing the American Pharmaceutical Manufacturers Association in Washington, D. C., in December, 1941, Surgeon General Thomas Parran said that, while vitamins may at times be prescribed as drugs in concentrated form, and may then spectacularly overcome the results of long-time vitamin deficiency in a dramatic manner, people should in general use ordinary foods to fill their normal vitamin requirements. At the same meeting Dr. William H. Sebrell, Jr., of the Public Health Service remarked that it was very easy for manufacturers to dupe the public regarding vitamin concentrates, and insisted that the public normally derive its vitamins from the groceryman.

Whereas many substances that we now regard as foods were originally regarded as drugs, vitamins first came into our ken as existing in foods and became drugs only after they could be synthesized. Chocolate, for instance, was brought from Mexico to Florence about 1606. Cardinal Richelieu's brother is supposed to have been the first French person to taste it, but he drank it for a spleen ailment. In 1617 Mme. de Sevigne told of a noble lady who drank chocolate while she was pregnant and as a result delivered a blackamoor. Doctors vied with one another in ascribing healing qualities to the drink, though some said it was a harsh laxative fit only for wild Indians.

Tea was introduced in England about 1650 and many medical miracles were claimed for it, the French soon advising it for gout. One writer dubbed it a panacea for rheumatism, colic, epilepsy, bladder stone, catarrh, and dysentery, while the Bishop of Avranches, who had long been a blear-eyed dyspeptic, restored both his sight and

his digestion with tea. He thereupon expressed his gratitude in a Latin elegy of 58 lines.

Coffee reached Marseilles from Arabia in 1644. It was used medically to fatten the lean, to reduce the obese, and to cure scrofula, hysteria, and toothache. Doctors found it infallible for colds and even serious lung trouble, when imbibed with cream. But it had its detractors, for one princess who became a great coffee bibbler died of a hundred ulcers which physicians attributed to the beverage.

In 1715 one doctor's thesis proved that coffee shortened life, while another declared that it induced nausea, cholera, barrenness, and impotence. But Philippe Hecquet, dean of the Paris medical faculty, declared that coffee allayed passion, put the relationship between the sexes on a higher plane, and enabled monks to keep their vows of chastity.

Sugar also was first introduced as a drug. In 1630 it was so rare that a monthly allowance was doled out at the largest hospital in Paris, the woman in charge being compelled to take oath that she used it only in compounding medicines prescribed by the doctors. It is still true, of course, that the line between foods and drugs is so faint that certain foods are listed in the *Pharmacopeia*. We have yet to learn exactly where food leaves off and drug begins. The vitamins offer an excellent modern instance in point.

Discussing this matter editorially, the *Journal of the American Dietetic Association* said in early 1939 (Feb. 1939 15:105ff.) that vitamin and mineral concentrates were in general foods, rather than drugs, though the concentrates must from time to time be used as drugs to fortify certain diets. We read: "The current and indiscriminate use of 'shot-gun' vitamin therapy without due regard to the interrelationships of the various vitamins, minerals, and other food substances, is apt to be but a transient phase which probably will go the way of other temporarily fashionable 'cure-all' systems."

In the *New England Journal of Medicine* (220:524) Arnold P. Meiklejohn has said: "Most dietary deficiencies are best prevented by directing the inquiring patient to the grocer rather than the druggist". Discussing the vitamin B complex in normal nutrition, C. A. Elvehjem, also in the *Journal of the American Dietic Association* (Aug.-Sept. 1940 16:646-54), has held that vitamins should if possible be obtained from natural foods, the concentrates being used only when medicine is required and their limitations are recognized.

While he saw no reason for wholesale food fortification or enrichment he could see no basic objection to adding synthetic vitamins to foods when this was cheaper, less objectionable, and more easily controlled than other methods of providing them.

In an editorial entitled "Vitamins for War," the *Journal of the American Medical Association* stated in October 1940 (Oct. 5, 1940 115:1198-9) that Sir John Orr and J. C. Drummond had advised Britain to see to it that the people got vitamins A and B_1 and calcium added to their meagre diet. Stiebeling of the Bureau of Home Economics has shown that many American diets were poor in vitamins A, D, and B_1, right while we were peaceful and prosperous. Deficiency in the last of these produces sluggishness, moodiness, indifference, fear, and fatigue, 300 I. U. being enough to prevent this and 600 I. U. being optimal.

Because of such findings as those abstracted above the *Consumers Guide,* published by the Department of Agriculture (May 1, 1939), has for some time been advising the public to derive vitamins from the diet. Vitamins have become big-time business, amounting to a hundred million dollars a year, and have appeared in milk, bread, soap, cosmetics, pills, candy bars, tooth paste, breakfast food, and many other commodities. But as to vitamin concentrates we read:

"The average person—unless his doctor tells him differently—can get all the vitamins he needs from a balanced diet of carefully selected foods properly prepared, and served three times a day. . . . So far as scientists know the only people who really need vitamin concentrates are babies and young children, expectant and nursing mothers, persons recuperating from sickness, and those following doctor's orders."

Therefore vitamin A should be sought in eggs, butter, cheese, whole milk, cream, fish-liver oils, and leafy green and yellow vegetables; the B complex in whole seeds, whole-grain cereals, legumes, peanuts, soybeans, green peas, green lima beans, pork, chicken, and kidneys; vitamin C in tomatoes and the citrus fruits generally; and D, especially required by the young, in salmon, egg yolk, and fish-liver oils.

Vitamin G or riboflavine may be derived from liver, kidney, heart, lean meat, eggs, cheese, whole or skim milk, turnip tops, beet tops, kale, mustard greens, rice polishings, peanuts, or soybeans.

The pellagra-preventive, nicotinic acid, while relatively cheap in pure form, also occurs in lean meat, chicken, liver, leafy green vegetables, green or dried peas and beans. The vitamin diet, therefore must contain plenty of fresh green and yellow vegetables, fresh fruits, meat, animal organs, milk, butter, cheese, eggs, and whole-grain cereals.

The cost of vitamins in concentrated form is high if not prohibitive. One proprietary containing vitamins A, B_1, B_2, C, and D in concentrated form costs half as much again as the equivalent in cod-liver oil, viosterol, brewer's yeast, and orange juice. The cheapest way of all to procure the vitamins is in a good diet. (See edit. in *New England Journal of Medicine,* Sept. 21, 1939 221:475.)

As was observed above it is easy for unscrupulous manufacturers to dupe the customers regarding vitamin concentrates. For instance, though the label on the bottle honestly states that the product contains 10,000 or 20,000 I. U. per tablet, how many laymen know that an International Unit of vitamin A is only 6/10,000 of a milligram, which is itself only 1/1,000 of a gram, which is 1/29 of an ounce! How many know also that ten or twenty thousand International Units of vitamin A are needed only in cases of extreme deficiency?

How many know, for instance, that Vitamins Plus Inc. stipulated with the Federal Trade Commission (Stipulation 2652, Oct. 23, 1940) to cease claiming directly or by implication that Vitamins Plus would produce sparkling eyes, gleaming lustrous hair, lovely complexion, and enable the taker to become active, gay, beautiful, charming, and to live without a let-up or a let-down? Individual false claims for the specific vitamins contained in this product had also to be discontinued.

On the other hand, as was shown at Mayo clinic, a supply of thiamin equivalent to about 1 milligram per 1,000 calories of food per day, either as concentrate or in food, would quickly and completely cure the manifold and diverse ills of subjects who had been starved of this vitamin for 3 to 6 months. Food can be medicine, and it is now known that many vague fatigue states and nervous disturbances are caused by lack either of specific vitamins or of a group of them.

When the National Nutrition Conference for Defense met in 1941 and brought our dietary deficiencies to public attention, the food industry missed a great opportunity in not following up with a widespread campaign of truthful educational advertising. That at

least would have been of great benefit to those who can afford good food. How about those who cannot?

On November 26, 1941, the New York *Herald Tribune* carried an account of a young man who collapsed from pellagra and died, after he had found work, because he had long refused to eat with his parents and his seven brothers and sisters, realizing there was too little food for them all. People still starve in the United States, the best fed country in the world.

Hazel K. Stiebeling and her aids state that only one-fourth of the families in the United States have good diets, a little more than one-third have fair, and somewhat less than a third have poor diets. If we all had "best-adapted" diets the nation would use twice the quantity of dairy products it does now, 25 to 70 percent more tomatoes, citrus fruits, and sources of vitamin C, and 100 percent more leafy green and yellow vegetables. Actually only half our farm families have good diets while one-fourth each have fair and poor diets. (*Miscellaneous Publication* 430, U. S. Dept. Agr., Are We Well Fed?)

Until a year or so ago we had approximately 55 percent of our people in families with annual incomes of less than $1,500. These people could afford to spend only from 6 to 10½ cents per person per meal. Yet the U. S. Army, feeding a complete diet, allows 21 cents per soldier per meal to buy it, retail prices. About 40 million people formed parts of families with annual incomes below $1,000 and it was estimated that 20 million of them could allow only 5 cents per person per meal for food. Under those circumstances they certainly did not get a balanced diet.

Just recently the Bureau of Home Economics put out a mimeograph on Planning Diets by the New Yardstick of Good Nutrition. It is revealing that the most liberal diet listed would allow for an expenditure of only about 17 cents per person per meal for food, while the low-cost diet would allow only 8 to 11 cents. In the past only families on annual incomes of from $3,000 to $4,999 a year, a mere 7 percent of our people, could allow 17 to 18 cents per person per meal for food.

More recent studies by the American Institute of Public Opinion confirm these Government findings. That reported December 22, 1940 indicated that one-third of the Nation was ill-fed, and that diets retarding health were eaten by about 4 families out of every 10. While only 20 percent of families earning $20 a week or more

were conscious of food lacks, 70 percent of those earning less than that knew they were dangerously underfed.

The study reported December 6, 1941, showed that the use of milk by the average American family was below the health-level requirement. The Government has long said each child should have 1 quart and each adult 1 pint of milk (or its equivalent) daily. But the typical American families the country over consume only one-half of this requirement. Moreover dietary standards were on the way down rather than up because people were meeting rising prices by cutting food consumption.

A half-hidden factor here should not be ignored. Though food prices rise, farmers still get a very small portion of the consumer's dollar. But in March, 1941, the Federal Trade Commission announced that the 10 largest fruit- and vegetable-canning corporations in the country handled almost half the business with aggregate sales of $266,403,196 a year. Their net over-all profits, after every deduction for taxes and selling expenses, including plenty for advertising, was 11.1 cents per dollar of sales!

What has been done to remedy this situation? For one thing the cheap-milk, school-lunch, and food-stamp plans have been instituted, primarily as surplus-diversion devices it is true, but secondarily to improve the nutritional status of millions of underfed children and adults. The market is there if distribution can be effected at a low price level and with high efficiency.

For instance milk-processing plants are quick to bid on contracts to bottle and distribute milk at prices much lower than normal, meaning they make some profit on the deal. They pay the farmer a little more for this milk than he usually gets for milk for manufacturing purposes, though not so much as he gets for fluid milk intended for domestic consumption. In certain instances demand shot up 477 percent in New York City schools when milk was made available at prices children could afford to pay.

The average consumption of milk and green vegetables by children in families which have annual incomes below a thousand dollars a year is less than one-half what it is in families with incomes over $2,500 a year; the consumption of citrus fruits is only one-third in the former of what it is in the latter. Most children in urban families with incomes of less than a thousand a year are undernourished. The school-lunch plan attacks this problem within the framework of an existing and traditionally hallowed institution, the public school.

More than 65,000 idle workers have been trained to prepare and serve school lunches to about four million children. This is an activity of the Surplus Marketing Administration. The foods are bought back well towards the original producer, the farmer, hence at considerable savings. They consist usually of commodities that would otherwise waste or rot on the farms or else depress the farmer's income if they went to market and reduced prices he received. The plan has been markedly successful and it is of interest to know also that such plans were started in France as long ago as 1849 and received recognition by Parliament as early as 1867.

The food-stamp plan is used also to stimulate consumption by relief and low-income families, again utilizing surpluses. By such means these families which previously had to get along on 5 cents per person per meal for food now receive 7½ cents.

In the midst of these useful social and economic experiments came the spoil of Europe by the Nazis and the invasion of Holland and Denmark which deprived Great Britain of much of her food. Before long she appealed to the United States for aid and a billion and a half dollars have so far been made available under the lease-lend program to send her food. She particularly requires of us eggs, milk, cheese, lard, pork, and chicken.

Between April and November 1, 1941, we sent to Britain 2.2 billion pounds of food. During October alone we shipped 20 million pounds of agricultural products daily, valued at two million dollars a day. Notable among the products were cheese, dried, frozen, and shell eggs, dried and evaporated milk, canned fish, pork meat products, dried beans, canned tomatoes, lard, prunes, raisins, and starch.

On September 8, 1941, the Secretary of Agriculture announced a great food-for-freedom campaign. Under this plan farm-production goals were set up for 1942. Farmers voluntarily signed up to produce such quantities of food as will amply provide for us and for British requirements as well. The quantities involved for export to Britain are huge—5 billion pounds of milk, or the equivalent, half a billion dozen eggs, 18 million pounds of poultry, 1.5 billion pounds of pork and lard, 1¼ million tons of fresh fruit, and 2½ million cases of canned vegetables—all for Britain. What about ourselves?

In view of what was said above consider the milk figure. Until 1940 we produced about 106 billion pounds of milk annually, but

1940 set up a record production of milk as of other agricultural commodities—111 billion pounds. Production in 1941 was about 117 billion pounds. The 1942 production goal is 125 billion pounds, 5 of which go to Britain.

However, if all Americans had a "best-adapted" diet we ourselves would consume 140 billion pounds of milk a year. Hence the 1942 goal falls below our scientifically ascertained domestic requirements by 15 billion pounds, though it does provide for an increased use by us of 3 billion pounds. In short, we are using the lease-lend program and the war as a device to increase our agricultural productive capacity of all essential farm commodities. When peace comes our post-war plans call for the continuous utilization of this capacity at full employment and the distribution of the products to all in need of them.

In fact the plan is to guarantee a full diet to every American citizen as his birthright. Secretary Wickward of Agriculture is on record about that. So is Secretary Morganthau, who told the National Grange at Worcester, Mass., on November 15, 1941: "My own feeling is that we should guarantee to every man, woman, and child the right to have enough milk and butter, enough fruit and vegetables, enough of the protective foods of all kinds so that everyone can be fit to do his part in the world of tomorrow."

During the post-war period there will be much readjustment. While that is going on, while industry absorbs the manpower previously required in the armed services or for military production, so that it too can operate at full capacity and full employment, we shall use the surplus-disposal plans—school lunch, cheap milk, food stamp, and so on—to increase the consumption of low-income and relief families. But once we get our agricultural and industrial plants running to capacity with full employment, while we effect efficient distribution of all these plants produce, the national income will rise to new heights, more people than ever before can pay their own way, and only the irreducible residue of unemployables will have to have government aid.

If it is wise the food industry will also learn some new tricks. It will find out how to process and distribute food products much more cheaply and efficiently than it does now. It will deliberately cater to the requirements of low-income groups by packaging honestly labelled substandard but fully nutritious foods at low prices. It will discover new sanitary methods of distributing many products in

bulk that are now sent out in unnecessarily expensive packages. In short, the food industry will become truly a service institution as it should be. It will learn to seek profits in narrow margins and quick turnovers and to avoid superfluous services and activities.

That is the food picture as the Government sees it today. In a way it does seem to menace some of the profits of the druggist and the pharmaceutical manufacturer. For it regards food as the proper source of many essentials now so often prescribed or used in self-medication as drugs. Furthermore, the program will produce a far healthier populace much less in need of medication than ever before.

Yet the ethical professional pharmacy will always have its honored place in the scheme of things. Much of the business that so-called drug stores now carry on might well go back to the grocery, the notion and gadget store, the perfumer and cosmetician, the liquor store, lunch-room, and restaurant.

The Therapeutic Research Corporation of Great Britain, Ltd.

Unique in the pharmaceutical field is the establishment of a private corporation capitalized at £500,000 for the purpose of the coordination and extension of research with a view of accelerating the discovery of new substances for the service of therapeutic and preventative medicine. Five companies have undertaken this co-operative effort each of which is an outstanding concern in the British drug industry.

One of the points of difficulty in this country, particularly in recent years, has been the problems arising in arranging equitable and fair distribution of the large number of medicinal agents that have been introduced. In some cases since the entire costs of research and development were born by a single company the cost to the consumer were of necessity quite high, and in some cases it is doubtful whether sufficient return was possible at all to those responsible for the development.

It may well be that cooperative effort in our own industry would serve to reduce costs by the elimination of duplicate and even quadruplicate effort and lowered costs mean in the final analysis what every fair-minded person should definitely strive for, a lowered cost of efficient medical care.

L. F. T.

EGO—AND I (Iodine)

By Ivor Griffith

IF the Garden of Eden was somewhere in the region of the Gobi desert, as is alleged by some, Adam and Eve, even after the primal sin had sent them commuting, lived on an iodine-low diet. No more inland spot could have been chosen for man's beginnings, and such of his children as remained long (several myrennia) in that vicinity have held on to their slit-eyed Mongol features. The Mongolian face may or may not have been man's original appearance. If it was, then all artists to date have neither depicted nor oriented Adam and Eve in conformity with physiologic *conjecture!*

Uneasy men, with strangely active and perhaps pathologic thyroid, who migrated shoreward and westward ultimately lost their Mongolian appearance, lost it permanently, except where today, through some freak of physiology, a thyroid gland underfunctions, and lacking iodine's influence, there is frequently a reversion to Mongoloid features and often Mongoloid characteristics. Consider the sufferers from over-thyroid supply and their tense living and on the other hand consider the composed sinesque hypothyroids.

Continuing our iodine wondering and wandering, is it possible that the attenuation of Mongolian features and attributes has been a function of time and migration as well as of water and soil and food. For instance think of the color and feature attenuation beginning with the Chinese, thence southwestward to the Thibetan, the Thai, the Indian, the Arab, etc., northwestward to the Lapp, the Finn, the Siberian, the Eskimo, etc., then east to the Inca, the American Indian, etc. One could almost graph the eye slant variation and so trace and track the time and place factors. Eyes have always been the thyroid signals. The pop-eyed are thyroid overdone, the slit-eyed, the slant-eyed, and the sunk-eyed may be under-iodated. Someone argues that the Eskimo has ample iodine in the sea food he eats, but we suggest, in rebuttal, that his fathers had remained so long inland that the complete wiping out of Mongoloid features will be a matter of more millenia. To get the thyroid operating on the same cycle in the Eskimo as it does in the Caucasion is a function of time and location, for more than likely the Caucasians (especially the Aryans!!) have been close to iodine supplies much longer than have God's frozen children! Furthermore it may be that cold climate is not conducive to diluting the Mongol traits.

To the laboratorian B. M. R. means *basal metabolic rate,* and in the indirect estimate of the functioning of that little iodine factory with big responsibilities, called the thyroid gland, a determination of the B. M. R. affords something of a diagnostic picture. Thus the normal hits the 100 mark, the over active thyroid runs up beyond the hundred, and the under active below, sometimes way below. Anthropologically there might be some value in a careful and elaborate statistical study of the B. M. R. of typical on-location Mongolians (not Mongoloid), of Lapps, Eskimos and Finns.

And since this day's ink seems to be iodine, it is interesting to recall that the chemist's crucible is now turning out at will, a clinically proven synthetic equivalent to the four iodine cornered complex delivered by that ounce of neck-located thyroid gland. Synthetic thyroxine, as first prepared by Harrington and Barger, despite its cumbersome two-ringed formula is nearly seventy per cent. rich in iodine. To prove its equality to the natural product the investigators pushed a weak solution of it into the circulation of a few patients with low metabolic rates (54 to 60) and the body promptly answered by smacking the bell at the hundred mark.

And mind you, of actual iodine, in active body use, only a trace is needed, a mere widow's mite—but what a mighty mite!!

The thyroid gland is present in all vertebrate animals beginning low down in the scale, with the lampreys and complicating its structure and increasing its size as it occurs farther up in the evolutionary scale. In fish the thyroid occurs as small scrubby patches little larger than pin heads scattered along the important blood vessels. Then in the reptiles it is a little larger and more compact, and still more prominent among the birds and the mammalia. But it is in the primates and in man that it attains to greatest size. Thus it might be said that the thyroid gland is an indicator of evolution.

The farther we are from our early home in the sea the larger the thyroid gland. Now if evolution continues along the same line, a million years from now our thyroid may have become the most important organ in our bodies. And man's appearance may be consequently so changed that instead of being the good looking creature he thinks he now is, he will have evolved into a pop-eyed, fat-headed, chinless creature, the space between his chin and his collar button having been taken over by his constantly expanding iodine plant.

But that is too far off to worry about. Several things may happen in a million years.

Listen! The high tide of iodine in the blood is about 1 grain of iodine to 10 million grains of blood or less than a hundredth (1/100) of a grain in the entire circulation. The iodine reservoir in the body, namely, the store room of the thyroid factory, only holds one-third of a grain (about 25 milligrams), and in order to keep this reservoir full the normal human being has only to consume per day, in his *air*, or food or drink, less than a thousandth of a grain of iodine. No wonder some people believe in Homeopathy. It seems that the Great Spirit did!!

Moral: Irrespective of religion make Friday a fry-day—of salt water crustaceans or fish!

This terrestrial sphere is rich in iodine! Especially in its aqueous phase. Most all sea organisms, plant and animals are heavy with it. Consider the sponge. In some tropical species the ash will contain from 8 to 14 per cent. of the element. This ash was given as a medicine, an *official* medicine, in the early part of the nineteenth century when the best "study of mankind was man," not the guinea pig! Centuries before the Pharmacopœia existed the Chinese *cured* neck tumors with sponge ash. Even the humble oyster, whether brought up in beds, well-aired or not, harbors his share of iodine. Sea water itself contains about 1/300th of a grain of iodine to the gallon, yet oddly the great Salt Lake of Utah while containing five times as much salt as ordinary sea water shows only 1/200th grain of iodine to the gallon. Which proves after all that iodine is a sea-going simple, and at its best only an excursioning land-lubber.

Certain imaginations have conjured the claim that all life was once marine or submarine—that the antecedents of every creature now living, like Venus of old, once lolled in a luke-warm sea. One of the ariadnic threads wherewith they bind their arguments is in the remarkable comparison which they make between animal blood and sea water. Blood plasma indeed is in salt content, chloride, phosphate, iodine and other substances, very like sea water, and the ratios are remarkably alike. The contention of such conjecturers is that whereas we were once limpid jelly fish floating lazily on the dank primeval ocean, we are now so evolved and involved that a share of the sea floats diligently within us, its ebb and flow in every heartbeat.

But so it is, with the mouse and the louse!! So what??

And is the matter of lassitude, of the complacent attitude of the typical Oriental of long inheritance, another of iodine's errors of omission? Listen again! The purpose of the body's iodine factory,

the thyroid gland seems to be to control the dynamy of living, in the physico-chemical sense. A thyroid gland which is over producing accelerates every body function—opens wide the drafts of the fiery furnaces wherein our food and flesh are burnt away to ashes and to energy, over-sensitizes our nervous structures and over-speeds our blood stream. Everything done is over done and death comes that much sooner!

But the gland that is under-producing slows up the system, under-fires the powerhouse and soots and shuts the chimneys, it underworks the brain and makes it dull and drowsy. Lack of its normal secretions undermines the nerve and muscle, the victim is awkward and clumsy, the blood is underfed and so invites infection. Everything done is underdone and even death comes lazily.

Thus are fifty years of Europe like a cycle in Cathay!!!

And thus too are we the trivial toys of a mite of iodine. No wonder the chemists have given this element the symbol I. It can well afford its egotistic elemence.

Health Fallacies

The following commonly believed fallacies which are all scientifically unsound were published in *Hygeia* recently together with a survey showing the extent of belief of these amongst a representative group of CCC workers. How many of them do you recognize as untrue?

"Eating green apples commonly causes colic.

"Cereals are rich in body building protein, provide a source for quick energy and are in general a good 'all-round' food.

"Canned vegetables and fruits allowed to remain in the original container until the next meal will be poisoned.

"Tooth decay is best prevented by thorough and frequent brushing.

"The 'stuffiness' and 'closeness' of the air in a room is due to an excess of carbonic acid gas or to the organic poisons from the breath.

"Baking soda hastens the digestive process in the stomach.

"Small organisms (bacteri) are spontaneously generated from filth or accumulations of dirt.

"It is more dangerous for an adult to have whooping cough than a child.

"An onion eaten raw is of value in the treatment of a cold.

"Exerting the body rests the mind."

SOLID EXTRACTS

Science Briefs
from
Here and There

Body burns that destroy areas of tissue, tend to disorder the blood's electrolytic and fluid balance, causing severe shock. Adequate amounts of fluid and salt are indicated, and, in some cases, blood or plasma are required. Helpful, too, is the administration of desoxycorticosterone acetate, the adrenal cortical hormone which is also used in the treatment of Addison's disease. Here is another remedial agent of especial use on or near the front line of battle, where burns are common.

AJP

At the recent convention of the American Pharmaceutical Association, it was pointed out by one lecturer that the women who lived more than 5000 years ago were just as vain as our present day consorts. They used more perfumes and sweet smelling oils than modern women, and it was the custom for the host at a party to dispense perfume flasks or spray his guests with atomized scented water. All of this was, no doubt, very true, since our efficient, worthwhile soap is a comparatively recent development.

AJP

Mannitol hexanitrate is not a new drug, but it is just now achieving more favorable attention through the development of a method of synthesis which makes less expensive production possible. First manufactured in 1895, this substance acts as a prolonged and effective vasodilator, similar to erythrityl tetranitrate, which latter, however, is more rapid in its action and of shorter duration. Both of these are used in relieving painful attacks of angina and in reducing abnormally high blood pressure.

Due to the fact that malaria is usually a chronic disease and not an acute one, there was a time when a protracted quinine treatment was believed necessary to combat that illness successfully. Now, however, it has been found that short treatments involve no more relapses than the long ones, and that they are less expensive, less apt to produce symptoms of cinchonism, easier for the patient to follow, and instrumental in bringing out the tonic effects of quinine because of the moderate amounts administered.

AJP

The exact position of vitamin B_6 in relation to human nutrition is not clearly defined. However, the fact has been established that patients who have been adequately treated with thiamin chloride (B_1), riboflavin (B_2), and nicotinic acid, and who still exhibit residual symptoms, often respond to B_6 administration. Thus it can be seen that vitamin therapy, considered by some to be quite simple, is really quite complex and it further supports the use of all of the associated B factors rather than a single individual of this group.

AJP

Medical service in the United States Army is well organized and comprehensive. To care for soldiers needing medical attention, the War Department has prescribed beds in station hospitals to the number of 4 per cent. of the total military force and in general hospitals to the number of 1 per cent. of the total military force. Hospitals for service in the combat zone are not included in these basic calculations.

AJP

Drunken driving has met, universally, individual and organized resentment. No one has much time for the person who drives a car while under the influence of liquor. Yet, not all fatal auto accidents involving "drunks" are caused by drivers who have had one or two too many, for the intoxicated pedestrian is an important factor in these happenings. In a recent study of almost 3500 fatalities, 30.7 per cent. of the pedestrians involved had inbibed alcoholic drinks. These conclusions were reached on analyses based on the brain alcohol content of the deceased victims.

If you want to keep your blood pressure down, you may some day see your surgeon, not your doctor. According to two eminent surgeons, a series of malignant hypertension cases treated with surgery and observed over a period of five years resulted in survival of 33 per cent. of the patients, whereas following medical treatment the mortality was more than 99 per cent.

AJP

Chlorophyll, ofttimes termed plant blood, has made meteoric progress in the realm of medicine, and is now branching out into commercial fields. For instance, when used with paper as a wrapper, it helps keep perishable foods from spoiling. It is also being used to assist in removing volatile nicotine from tobacco. If you have not heard much about this substance and its properties, you soon will, for its commercial exploiters are planning to turn the facts of its properties over to their advertising staffs. Then, perhaps, you may like to have a moment or two when you are not hearing or reading about chlorophyll.

OUR CONTRIBUTORS THIS MONTH

Ivor Griffith Ph. M., D. Sc., F. R. S. A., is President of the Philadelphia College of Pharmacy and Science, a member of the Board of Health of the State of Pennsylvania and widely active in pharmaceutical affairs. Dr. Griffith is well known to the readers of this journal since he served as its editor for many years. We are certain that his contributions from time to time will be received with interest and enjoyment.

T. Swann Harding, B. Sc. Regular readers of our Journal need no introduction to this hard-hitting and ever popular author. Situated in a strategic position in Washington, Mr. Harding knows well the trend of the times and the aims and policy of certain divisions of our government. Liberals will find in his writings much to cause them to rejoice and conservatives much to accept with finality the death of so-called "rugged individualism."

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